
3. *Evaluation*

This section provides information on the importance of six evaluation factors; the data defining the performance of each alternative by analysis sector; and, the evaluation results.

3.1 Factors

The refined Practical Alternatives were presented to the public at a workshop held on January 24. At that time, and through the end of February, input was received on the rating of six evaluation factors that allowed discrimination between the two build alternatives. These factors are:

- Displacements
- Historics
- Wetlands
- Community Cohesion
- Construction Cost
- Roadway Safety

Displacements defines through field inventory the number of houses, businesses and platted residential lots that would be totally taken by the widening of M-15.

Historics is an assessment of those properties considered eligible for listing on the *National Register of Historic Places* that could be adversely affected by widening M-15 compared to doing nothing. Field work by specialists and detailed document review, along with personal interviews, are the basis of this assessment.

A meeting with the State Historic Preservation Officer has been conducted to discuss historic properties issues in Goodrich, particularly two properties on the east side of M-15.

Wetlands impacts are measured in the number of acres that could be taken by widening M-15. Wetlands are divided into three categories, as discussed earlier, based upon field analysis by specialists.

Community cohesion is the assessment by professional planners of the degree to which a community's social interaction and/or the services now provided (e.g., fire, school transportation) are expected to be disrupted by widening M-15. It was observed that even though a boulevard would be wider than a five-lane road, the boulevard would have somewhat less negative effect on community cohesion because of the refuge the median would provide and the enhanced character of the road associated with landscaping the median.

Construction cost includes the cost to excavate/backfill, install utilities and traffic signals, provide drainage, and build the roadway. It is sensitive to the soil conditions, particularly wetlands. It accounts for waterway crossings. But, it does not include property acquisition/relocation or the cost of design or project administration. A contingency of 15 percent of all construction cost items is added to address uncertainties. Usually, the narrower five-lane road is less costly than the boulevard in the same sector.

Roadway safety accounts for the difference in roadway type. Generally speaking, Michigan experience indicates a boulevard will have roughly half the crashes of a five-lane facility.

3.1.1 Weighting

About five dozen citizens and 11 members of the consultant team (engineers, planners, and specialists in historic and wetlands) separately rated the six evaluation factors. The results listed below indicate that both groups agree roadway safety is the highest rated evaluation factor with displacements rated second. Both groups agree "historics" is fourth and construction cost is the lowest rated factor, with the consultant scoring it even lower than the citizens. The citizens believed the third most important factor is community cohesion; the consultant scores it fifth, but less than one point lower than the citizens. The reverse happens with "wetlands" with the consultant scoring it third highest and the citizens fifth; but the spread is also less than one point.

<u>Evaluation Factor</u>	<u>Citizen Weight</u>	<u>Consultant Weight</u>
Displacements	18.82% (2)	18.97% (2)
Historics	16.49% (4)	16.98% (4)
Wetlands	16.30% (5)	17.17% (3)
Community Cohesion	17.33% (3)	16.43% (5)
Construction Cost	12.13% (6)	9.48% (6)
Roadway Safety	18.93% (1)	20.97% (1)
	100.00%	100.00%

Each of these factor weightings are used in the evaluation of the alternatives.

3.2 Evaluation

Table 3-1 illustrates the data used to evaluate the alternatives. It is divided into sectors (Figure 3-1) to allow the evaluation process to be more manageable and easier to report. It is noteworthy that Sector A1 is not included in the evaluation as the road improvement from I-69 to just south of Lippincott Road is limited to five lanes. Nevertheless, it is noted there will be no takings of homes or businesses, nor impacts on historic properties or wetlands. The construction cost is expected to be \$2.29 million (2001 dollars).

The information of Table 3-1 was used by the consultant to score the two alternatives from 1 to 100. Generally, a score above 50 indicates that a positive effect is expected, fully realizing that, as with any road widening, some intrusion will occur. These scores of 1 to 100 were then weighted by the factor weightings noted in the previous section. For example, if the total consultant unweighted score of the displacements impacts in Sector A2 for the five-lane option is 84.50, then the weighted score using citizens' weight (.1882) is 15.90 (or $84.5 \times .1882 = 15.90$). The weighted score of each of six evaluation factors is then added to determine the total score of an alternative. The maximum possible weighted score is 100.

As might be expected, after several refinements have been made to the alternatives, they have impacts that are very close in many categories in most sectors. The sector-by-sector evaluation presented below reflects that.

Practical Alternatives to Widening M-15

Sector →	Sector A										Sector B										Sect				
	A2 - 3.64 miles					B1 - 2.14 miles					B2 - 1.25 miles					B3 - 1.25 miles					C1 - 1.70 miles				
	S of Lippincott to Hill					Hill to N of Hegel					N of Hegel to Green (Goodrich)					Green to Klipp					Kipp to Auten				
Improvement → Factor ↓	Five-Lane #	Per Mi. #	Narrow Blvd. #	Per Mi. #	Five-Lane #	Per Mi. #	Narrow Blvd. #	Per Mi. #	Five-Lane #	Per Mi. #	One-way Pair * #	Per Mi. #	Five-Lane #	Per Mi. #	Narrow Blvd. #	Per Mi. #	Five-Lane #	Per Mi. #	Narrow Blvd. #	Per Mi. #	Five-Lane #	Per Mi. #	Narrow Blvd. #	Per Mi. #	
1. Displacements																									
Homes	3	0.8	46	12.6		0	0.0	7	3.3	3	2.4	3	2.4		0	0.0	0	0.0	0	0.0	1	0.6	5	2.9	
Businesses	2	0.5	4	1.1		0	0.0	0	0.0	11	8.8	10	8.0		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	
Vacant DU Lots **	0	0.0	0	0.0		0	0.0	0	0.0	0	0.0	3	2.4		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	
2. Historic (Properties Directly Affected)																									
Maybe Nat. Reg.	1	--	1	--		0	--	0	--	1	--	0	--		0	--	0	--	0	--	0	--	0	--	
3. Wetlands (acres)																									
Highest value	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	1.45	1.16	1.45	1.16		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Medium value	0.74	0.20	1.22	0.34		0.02	0.01	0.04	0.02	0.01	0.01	0.38	0.30		0.01	0.01	0.01	0.01	0.03	0.02	0.05	0.03	0.10	0.06	
Lowest value	2.28	0.63	4.71	1.29		0.16	0.07	0.31	0.14	0.07	0.06	0.14	0.11		0.07	0.06	0.07	0.06	0.14	0.11	0.03	0.02	0.08	0.05	
Total (acres)	3.02	0.83	5.93	1.63		0.18	0.08	0.35	0.16	1.53	1.22	1.97	1.58		0.08	0.06	0.08	0.06	0.17	0.14	0.08	0.05	0.18	0.11	
4. Community Cohesion																									
High/Medium/Low	Medium		Medium			Medium		Medium		High		Medium to High			Medium		Medium		Medium		Medium		Medium		
5. Construction Cost																									
(millions of 2001 dollars)	\$13.20	\$3.63	\$14.66	\$4.03		\$7.28	\$3.40	\$7.37	\$3.44	\$4.57	\$3.66	\$6.46	\$5.17		\$4.18	\$3.34	\$4.40	\$3.52	\$5.06	\$2.98	\$5.11	\$3.01			
6 Roadway Safety																									
Total Accidents Year 2025	167	45.9	75	20.6		86	40.2	39	18.2	54	43.2	24	19.2		54	43.2	24	19.2	76	44.7	34	20.0			

Source: The Corradino Group

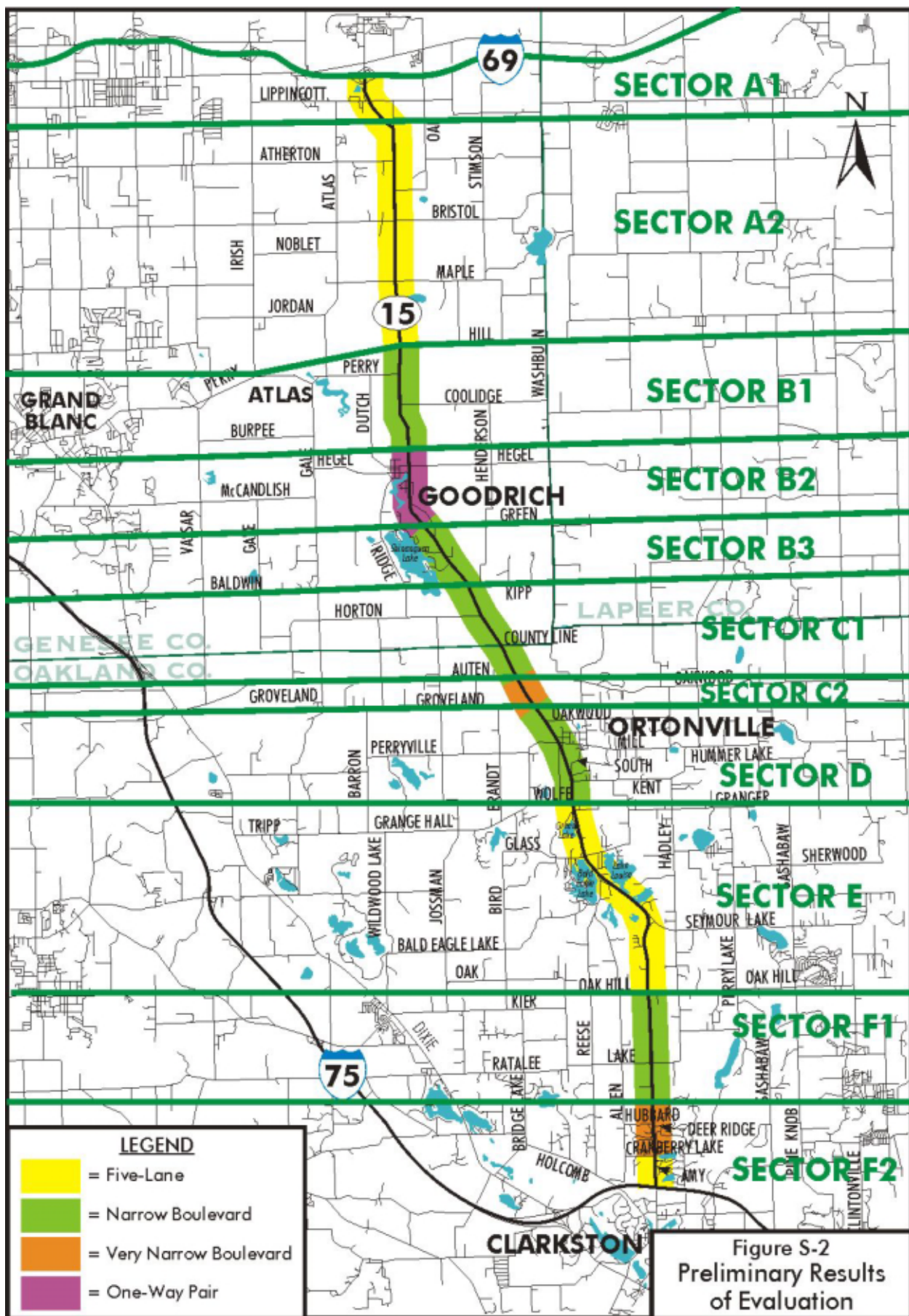
* In Goodrich (Sector B2) a one-way pair would be developed.

** The number of total takes of platted but "unbuilt" residential lots.

Table 3-1 (continued)
Evaluation Data
Practical Alternatives to Widening M-15

Sector →	Sector D D - 1.80 miles						Sector E E - 3.79 miles						Sector F F1 - 2.20 miles						Sector F F2 - 1.25 miles						Total 20.27 miles					
	Groveland to Wolfe (Ortonville)						Wolfe to Oak Hill						Oak Hill to N of Hubbard						N of Hubbard to I-75						I-69 to I-75					
Improvement → Factor ↓	Five-Lane #	Per Mi. #	Narrow Blvd. #	Five-Lane #	Per Mi. #	Narrow Blvd. #	Five-Lane #	Per Mi. #	Narrow Blvd. #	Five-Lane #	Per Mi. #	Narrow Blvd. #	Five-Lane #	Per Mi. #	Narrow Blvd. #	Five-Lane #	Per Mi. #	Narrow Blvd. #	Five-Lane #	Per Mi. #	Narrow Blvd. #	Five-Lane #	Per Mi. #	Narrow Blvd. #	Five-Lane #	Per Mi. #	Narrow Blvd. #	Five-Lane #	Per Mi. #	Narrow Blvd. #
1. Displacements																														
Homes	0	0.0	4	2.2	0	0.0	10	2.6	1	0.5	8	3.6	1	0.8	1	0.8	9	0.4	85	4.2										
Businesses	3	1.7	16	8.9	6	1.6	22	5.8	0	0.0	1	0.5	0	0.0	0	0.0	22	1.1	55	2.7										
Vacant DU Lots **	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	0.1										
2. Historic Properties Directly Affected																														
Maybe Nat. Reg.	2	--	2	--	0	--	1	--	0	--	0	--	1	--	1	--	5	--	5	--										
3. Wetlands (acres)																														
Highest value	0.53	0.29	1.03	0.57	2.22	0.59	4.02	1.06	0.62	0.28	1.01	0.46	0.00	0.00	0.00	0.00	6.39	0.32	9.08	0.45										
Medium value	0.80	0.44	1.55	0.86	0.96	0.25	1.50	0.40	0.04	0.02	0.09	0.04	0.00	0.00	0.00	0.00	2.63	0.13	4.91	0.24										
Lowest value	0.17	0.09	0.23	0.13	0.76	0.20	2.24	0.59	0.00	0.00	0.06	0.03	0.00	0.00	0.00	0.00	3.60	0.18	7.97	0.39										
Total (acres)	1.50	0.83	2.81	1.56	3.94	1.04	7.76	2.05	0.66	0.30	1.16	0.53	0.00	0.00	0.00	0.00	12.62	0.62	21.96	1.08										
4. Community Cohesion																														
High/Medium/Low																														
5. Construction Cost																														
(millions of 2001 dollars)	\$6.56	\$3.64	\$7.21	\$4.01	\$13.96	\$3.68	\$18.87	\$4.98	\$8.28	\$3.76	\$9.53	\$4.33	\$3.70	\$2.96	\$4.82	\$3.86	\$71.60	\$3.53	\$83.30	\$4.11										
6 Roadway Safety																														
Total Accidents Year 2025	89	49.44	40	22.2	204	53.8	92	24.3	119	54.1	53	24.1	95	76.0	43	34.4	1002.0	49.4	468.0	23.1										

Source: The Corradino Group



L:\Projects\2010\Graphics\FigS-1.cdr

3.2.1 Sector A2

The evaluation data for Section A2, a 3.64-mile section of M-15 from just south of Lippincott Road to Hill, are listed in Table 3-2. By studying these data, members of the consultant team provided the highest overall score to widening M-15 to five lanes (see totals in Table 3-3). This reflects that many fewer displacements of homes and businesses and acres of wetlands would be involved with a five-lane improvement versus a narrow boulevard. On the other hand, the safety features of a boulevard weigh back in favor of it over a five-lane road but not enough to allow the boulevard to score higher overall. It is noteworthy that because the citizens' evaluation factor weights and those of the consultant are so close, the resultant scoring produces virtually identical results (66.86 using citizens' weights; 66.60 using consultant's weights).

Table 3-2
Sector A2 Evaluation Data

A2 - 3.64 miles S of Lippincott to Hill				
Improvement →	Five-Lane		Narrow Blvd.	
Factor ↓	#	Per Mi.	#	Per Mi.
1. Displacements				
Homes	3	0.8	46	12.6
Businesses	2	0.5	4	1.1
Vacant DU Lots *	0	0.0	0	0.0
2. Historics (Properties Directly Affected)				
Maybe Nat. Reg.	1	--	1	--
3. Wetlands (acres)				
Highest value	0.00	0.00	0.00	0.00
Medium value	0.74	0.20	1.22	0.34
Lowest value	2.28	0.63	4.71	1.29
Total (acres)	3.02	0.83	5.93	1.63
4. Community Cohesion				
High/Medium/Low	Medium		Medium	
5. Construction Cost				
(millions of dollars)	\$13.20	3.63	\$14.66	4.03
6 Roadway Safety				
Total Accidents Year 2025	167	45.9	75	20.6

Source: The Corradino Group

* The number of total takes of platted but "unbuilt" residential lots.

Table 3-3
Sector A2 Evaluation Results

Consultant Unweighted Scores		
	Five-Lane	Narrow Boulevard
Displacements	84.50	44.00
Historics	60.07	58.79
Wetlands	69.14	62.50
Community Cohesion	52.79	64.64
Construction Cost	76.71	72.21
Roadway Safety	59.86	88.14
Citizens Weighted Scores		
Displacements (18.82%)	15.90	8.28
Historics (16.49%)	9.91	9.69
Wetlands (16.30%)	11.27	10.19
Community Cohesion (17.33%)	9.15	11.20
Construction Cost (12.13%)	9.31	8.76
Roadway Safety (18.93%)	11.33	16.69
Total	66.86	64.81
Consultant Weighted Scores		
Displacements (18.97%)	16.03	8.35
Historics (16.98%)	10.20	9.98
Wetlands (17.17%)	11.87	10.73
Community Cohesion (16.43%)	8.68	10.62
Construction Cost (9.48%)	7.28	6.85
Roadway Safety (20.97%)	12.55	18.48
Total	66.60	65.01

Source: The Corradino Group

3.2.2 Sector B1

The evaluation data allows the consultant to score the narrow boulevard alternative higher in Sector B1. This reflects advantages in the safety and community cohesion areas which overcome the negative of the potential displacement of seven homes. There is very little difference between alternatives in the areas of wetlands impacts and construction costs.

Table 3-4
Sector B1 Evaluation Data

B1 - 2.14 miles Hill to N of Hegel				
Improvement →	Five-Lane		Narrow Blvd.	
Factor ↓	#	Per Mi.	#	Per Mi.
1. Displacements				
Homes	0	0.0	7	3.3
Businesses	0	0.0	0	0.0
Vacant DU Lots *	0	0.0	0	0.0
2. Historics (Properties Directly Affected)				
Maybe Nat. Reg.	0	--	0	--
3. Wetlands (acres)				
Highest value	0.00	0.00	0.00	0.00
Medium value	0.02	0.01	0.04	0.02
Lowest value	0.16	0.07	0.31	0.14
Total (acres)	0.18	0.08	0.35	0.16
4. Community Cohesion				
High/Medium/Low	Medium		Medium	
5. Construction Cost				
(millions of dollars)	\$7.28	3.40	\$7.37	3.44
6 Roadway Safety				
Total Accidents Year 2025	86	40.2	39	18.2

Source: The Corradino Group

* The number of total takes of platted but "unbuilt" residential lots.

Table 3-5
Sector B1 Evaluation Results

Consultant Unweighted Scores		
	Alternative 1 Five-Lane	Alternative 2 Narrow Boulevard
Displacements	91.43	76.57
Historics	83.57	82.79
Wetlands	83.14	79.93
Community Cohesion	52.43	64.07
Construction Cost	77.43	76.86
Roadway Safety	62.07	90.21
Citizens Weighted Scores		
Displacements (18.82%)	17.21	14.41
Historics (16.49%)	13.78	13.65
Wetlands (16.30%)	13.55	13.03
Community Cohesion (17.33%)	9.09	11.10
Construction Cost (12.13%)	9.39	9.32
Roadway Safety (18.93%)	11.75	17.08
Total	74.77	78.59
Consultant Weighted Scores		
Displacements (18.97%)	17.34	14.53
Historics (16.98%)	14.19	14.05
Wetlands (17.17%)	14.28	13.72
Community Cohesion (16.43%)	8.62	10.53
Construction Cost (9.48%)	7.34	7.29
Roadway Safety (20.97%)	13.01	18.91
Total	74.78	79.04

Source: The Corradino Group

3.2.3 Sector B2

The primary force in creating the concept of a one-way pair in Goodrich has been removed as it was determined that the original Enos Goodrich house is not affected by widening M-15. Nevertheless, the evaluation data indicate the one-way pair approach has fewer impacts on historic and wetland resources, a better effect on community cohesion, and a lower expected exposure to vehicle crashes. Displacements impacts are about even while construction cost favors widening M-15. In light of these characteristics, the consultant scores highest the one-way pair.

Table 3-6
Sector B2 Evaluation Data

B2 - 1.25 miles N of Hegel to Green (Goodrich)				
Improvement →	Five-Lane		One-way Pair *	
Factor ↓	#	Per Mi.	#	Per Mi.
1. Displacements				
Homes	3	2.4	3	2.4
Businesses	11	8.8	10	8.0
Vacant DU Lots **	0	0.0	3	2.4
2. Historics (Properties Directly Affected)				
Maybe Nat. Reg.	1	--	0	--
3. Wetlands (acres)				
Highest value	1.45	1.16	1.45	1.16
Medium value	0.01	0.01	0.38	0.30
Lowest value	0.07	0.06	0.14	0.11
Total (acres)	1.53	1.22	1.97	1.58
4. Community Cohesion				
High/Medium/Low	High		Medium to High	
5. Construction Cost				
(millions of dollars)	\$4.57	3.66	\$6.46	5.17
6 Roadway Safety				
Total Accidents Year 2025	54	43.2	24	19.2

Source: The Corradino Group

* In Goodrich (Sector B2) a one-way pair would be developed.

** The number of total takes of platted but "unbuilt" residential lots.

Table 3-7
Sector B2 Evaluation Results

Consultant Unweighted Scores		
	Alternative 1 Five-Lane	Alternative 2 One-Way Pair
Displacements	71.50	73.57
Historics	50.00	83.57
Wetlands	57.64	54.21
Community Cohesion	38.43	52.93
Construction Cost	76.21	64.21
Roadway Safety	61.57	89.00
Citizens Weighted Scores		
Displacements (18.82%)	13.43	13.85
Historics (16.49%)	8.25	13.78
Wetlands (16.30%)	9.40	8.84
Community Cohesion (17.33%)	6.66	9.17
Construction Cost (12.13%)	9.24	7.79
Roadway Safety (18.93%)	11.66	16.85
Total	58.66	70.27
Consultant Weighted Scores		
Displacements (18.97%)	13.56	13.96
Historics (16.98%)	8.49	14.19
Wetlands (17.17%)	9.90	9.31
Community Cohesion (16.43%)	6.32	8.70
Construction Cost (9.48%)	7.23	6.09
Roadway Safety (20.97%)	12.91	18.66
Total	58.40	70.90

Source: The Corradino Group

3.2.4 Sector B3

Widening M-15 to either five lanes or a boulevard in Sector B3 is not expected to take any homes or businesses, would have no impact on historic properties and virtually none on wetlands. The construction costs are virtually the same. So, the boulevard's advantages in roadway safety and community cohesion allow it to score higher in Sector B3.

Table 3-8
Sector B3 Evaluation Data
Practical Alternatives to Widening M-15

B3 - 1.25 miles Green to Kipp				
Improvement →	Five-Lane		Narrow Blvd.	
Factor ↓	#	Per Mi.	#	Per Mi.
1. Displacements				
Homes	0	0.0	0	0.0
Businesses	0	0.0	0	0.0
Vacant DU Lots *	0	0.0	0	0.0
2. Historics (Properties Directly Affected)				
Maybe Nat. Reg.	0	--	0	--
3. Wetlands (acres)				
Highest value	0.00	0.00	0.00	0.00
Medium value	0.01	0.01	0.03	0.02
Lowest value	0.07	0.06	0.14	0.11
Total (acres)	0.08	0.06	0.17	0.14
4. Community Cohesion				
High/Medium/Low	Medium		Medium	
5. Construction Cost				
(millions of dollars)	\$4.18	3.34	\$4.40	3.52
6 Roadway Safety				
Total Accidents Year 2025	54	43.2	24	19.2

Source: The Corradino Group

* The number of total takes of platted but "unbuilt" residential lots.

Table 3-9
Sector B3 Evaluation Results

Consultant Unweighted Scores		
	Alternative 1 Five-Lane	Alternative 2 Narrow Boulevard
Displacements	91.43	91.43
Historics	82.43	82.07
Wetlands	84.43	81.43
Community Cohesion	52.43	63.57
Construction Cost	78.64	76.29
Roadway Safety	61.86	90.64
Citizens Weighted Scores		
Displacements (18.82%)	17.21	17.21
Historics (16.49%)	13.59	13.53
Wetlands (16.30%)	13.76	13.27
Community Cohesion (17.33%)	9.09	11.02
Construction Cost (12.13%)	9.54	9.25
Roadway Safety (18.93%)	11.71	17.16
Total	74.90	81.44
Consultant Weighted Scores		
Displacements (18.97%)	17.34	17.34
Historics (16.98%)	13.99	13.93
Wetlands (17.17%)	14.50	13.98
Community Cohesion (16.43%)	8.62	10.45
Construction Cost (9.48%)	7.46	7.24
Roadway Safety (20.97%)	12.97	19.00
Total	74.88	81.94

Source: The Corradino Group

3.2.5 Sector C1

Sector C1 is virtually free of historic and wetland impacts, regardless of widening option. The construction costs are about the same. And, while five homes would be taken with a boulevard, compared to one with a five-lane widening, the safety and community cohesion advantages allow the boulevard to score highest here.

Table 3-10
Sector C1 Evaluation Data

		C1 - 1.70 miles Kipp to Auten			
Improvement →		Five-Lane		Narrow Blvd.	
Factor ↓		#	Per Mi.	#	Per Mi.
1. Displacements					
Homes		1	0.6	5	2.9
Businesses		0	0.0	0	0.0
Vacant DU Lots *		0	0.0	0	0.0
2. Historics (Properties Directly Affected)					
Maybe Nat. Reg.		0	--	0	--
3. Wetlands (acres)					
Highest value		0.00	0.00	0.00	0.00
Medium value		0.05	0.03	0.10	0.06
Lowest value		0.03	0.02	0.08	0.05
Total (acres)		0.08	0.05	0.18	0.11
4. Community Cohesion					
High/Medium/Low		Medium		Medium	
5. Construction Cost					
(millions of dollars)		\$5.06	2.98	\$5.11	3.01
6 Roadway Safety					
Total Accidents Year 2025		76	44.7	34	20.0

Source: The Corradino Group

* The number of total takes of platted but "unbuilt" residential lots.

Table 3-11
Sector C1 Evaluation Results

Consultant Unweighted Scores		
	Alternative 1 Five-Lane	Alternative 2 Narrow Boulevard
Displacements	86.93	79.14
Historics	83.00	82.36
Wetlands	83.50	81.14
Community Cohesion	53.50	64.64
Construction Cost	82.57	82.07
Roadway Safety	60.93	89.21
Citizens Weighted Scores		
Displacements (18.82%)	16.36	14.89
Historics (16.49%)	13.69	13.58
Wetlands (16.30%)	13.61	13.23
Community Cohesion (17.33%)	9.27	11.20
Construction Cost (12.13%)	10.02	9.96
Roadway Safety (18.93%)	11.53	16.89
Total	74.48	79.75
Consultant Weighted Scores		
Displacements (18.97%)	16.49	15.01
Historics (16.98%)	14.09	13.98
Wetlands (17.17%)	14.34	13.93
Community Cohesion (16.43%)	8.79	10.62
Construction Cost (9.48%)	7.83	7.78
Roadway Safety (20.97%)	12.77	18.70
Total	74.31	80.04

Source: The Corradino Group

3.2.6 Sector C2

Once again, the consultant observes significant advantages of the boulevard (very narrow in this sector) over the five-lane widening option for M-15 in the safety and community cohesion areas. All other impacts are virtually even for each alternative. This results in a higher score for the boulevard option.

Table 3-12
Sector C2 Evaluation Data

C2 - 0.59 miles Auten to Groveland				
Improvement →	Five-Lane		Very Narrow Blvd.	
Factor ↓	#	Per Mi.	#	Per Mi.
1. Displacements				
Homes	0	0.0	1	1.7
Businesses	0	0.0	0	0.0
Vacant DU Lots *	0	0.0	0	0.0
2. Historics (Properties Directly Affected)				
Maybe Nat. Reg.	0	--	0	--
3. Wetlands (acres)				
Highest value	1.57	2.66	1.57	2.66
Medium value	0.00	0.00	0.00	0.00
Lowest value	0.00	0.00	0.00	0.00
Total (acres)	1.57	2.66	1.57	2.66
4. Community Cohesion				
High/Medium/Low	Medium		Medium	
5. Construction Cost				
(millions of dollars)	\$2.52	4.27	\$2.58	4.37
6 Roadway Safety				
Total Accidents Year 2025	26	44.1	12	20.3

Source: The Corradino Group

* The number of total takes of platted but "unbuilt" residential lots.

Table 3-13
Sector C2 Evaluation Results

Consultant Unweighted Scores		
	Alternative 1 Five-Lane	Alternative 2 Narrow Boulevard
Displacements	91.43	82.64
Historics	83.57	82.79
Wetlands	41.43	41.43
Community Cohesion	52.79	65.00
Construction Cost	70.43	69.36
Roadway Safety	64.57	90.29
Citizens Weighted Scores		
Displacements (18.82%)	17.21	15.55
Historics (16.49%)	13.78	13.65
Wetlands (16.30%)	6.75	6.75
Community Cohesion (17.33%)	9.15	11.26
Construction Cost (12.13%)	8.54	8.41
Roadway Safety (18.93%)	12.22	17.09
Total	67.65	72.73
Consultant Weighted Scores		
Displacements (18.97%)	17.34	15.68
Historics (16.98%)	14.19	14.05
Wetlands (17.17%)	7.11	7.11
Community Cohesion (16.43%)	8.68	10.68
Construction Cost (9.48%)	6.68	6.58
Roadway Safety (20.97%)	13.54	18.93
Total	67.54	73.03

Source: The Corradino Group

3.2.7 Sector D

The boulevard option has advantages in Sector D in roadway safety and community cohesion and disadvantages in displacements and wetlands. Because safety rates higher than displacements and community cohesion is higher than wetlands for the citizens' rating but lower for the consultant's, the boulevard scores higher overall.

Table 3-14
Sector D Evaluation Data

D - 1.80 miles Groveland to Wolfe (Ortonville)				
Improvement →	Five-Lane		Narrow Blvd.	
Factor ↓	#	Per Mi.	#	Per Mi.
1. Displacements				
Homes	0	0.0	4	2.2
Businesses	3	1.7	16	8.9
Vacant DU Lots *	0	0.0	0	0.0
2. Historics (Properties Directly Affected)				
Maybe Nat. Reg.	2	--	2	--
3. Wetlands (acres)				
Highest value	0.53	0.29	1.03	0.57
Medium value	0.80	0.44	1.55	0.86
Lowest value	0.17	0.09	0.23	0.13
Total (acres)	1.50	0.83	2.81	1.56
4. Community Cohesion				
High/Medium/Low	Medium		Medium	
5. Construction Cost				
(millions of dollars)	\$6.56	\$3.64	\$7.21	\$4.01
6 Roadway Safety				
Total Accidents Year 2025	89	49.44	40	22.2

Source: The Corradino Group

* The number of total takes of platted but "unbuilt" residential lots.

Table 3-15
Sector D Evaluation Results

Consultant Unweighted Scores		
	Alternative 1 Five-Lane	Alternative 2 Narrow Boulevard
Displacements	86.57	74.00
Historics	52.14	51.07
Wetlands	59.93	51.36
Community Cohesion	49.14	61.93
Construction Cost	76.57	72.50
Roadway Safety	58.57	86.86
Citizens Weighted Scores		
Displacements (18.82%)	16.29	13.93
Historics (16.49%)	8.60	8.42
Wetlands (16.30%)	9.77	8.37
Community Cohesion (17.33%)	8.52	10.73
Construction Cost (12.13%)	9.29	8.79
Roadway Safety (18.93%)	11.09	16.44
Total	63.55	66.69
Consultant Weighted Scores		
Displacements (18.97%)	16.42	14.04
Historics (16.98%)	8.85	8.67
Wetlands (17.17%)	10.29	8.82
Community Cohesion (16.43%)	8.08	10.18
Construction Cost (9.48%)	7.26	6.88
Roadway Safety (20.97%)	12.28	18.21
Total	63.18	66.79

Source: The Corradino Group

3.2.8 Sector E

The five-lane option has positive differences in displacements, historic, and wetlands impacts. Its cost is about 25 percent less than the boulevard alternative. All these factors allow the five-lane option to widening M-15 to score higher.

Table 3-16
Sector E Evaluation Data

E - 3.79 miles Wolfe to Oak Hill				
Improvement →	Five-Lane		Narrow Blvd.	
Factor ↓	#	Per Mi.	#	Per Mi.
1. Displacements				
Homes	0	0.0	10	2.6
Businesses	6	1.6	22	5.8
Vacant DU Lots *	0	0.0	0	0.0
2. Historic (Properties Directly Affected)				
Maybe Nat. Reg.	0	--	1	--
3. Wetlands (acres)				
Highest value	2.22	0.59	4.02	1.06
Medium value	0.96	0.25	1.50	0.40
Lowest value	0.76	0.20	2.24	0.59
Total (acres)	3.94	1.04	7.76	2.05
4. Community Cohesion				
High/Medium/Low	Medium		Medium	
5. Construction Cost				
(millions of dollars)	\$13.96	3.68	\$18.87	4.98
6 Roadway Safety				
Total Accidents Year 2025	204	53.8	92	24.3

Source: The Corradino Group

* The number of total takes of platted but "unbuilt" residential lots.

Table 3-17
Sector E Evaluation Results

Consultant Unweighted Scores		
	Alternative 1 Five-Lane	Alternative 2 Narrow Boulevard
Displacements	85.64	72.29
Historics	79.07	49.21
Wetlands	53.21	42.14
Community Cohesion	50.29	63.36
Construction Cost	75.64	65.29
Roadway Safety	55.71	84.57
Citizens Weighted Scores		
Displacements (18.82%)	16.12	13.60
Historics (16.49%)	13.04	8.12
Wetlands (16.30%)	8.67	6.87
Community Cohesion (17.33%)	8.71	10.98
Construction Cost (12.13%)	9.18	7.92
Roadway Safety (18.93%)	10.55	16.01
Total	66.27	63.50
Consultant Weighted Scores		
Displacements (18.97%)	16.25	13.71
Historics (16.98%)	13.42	8.35
Wetlands (17.17%)	9.14	7.24
Community Cohesion (16.43%)	8.26	10.41
Construction Cost (9.48%)	7.17	6.19
Roadway Safety (20.97%)	11.68	17.73
Total	65.93	63.64

Source: The Corradino Group

3.2.9 Sector F1

The impact data in Sector F1 indicate the boulevard has advantages in the roadway safety and community cohesion areas. These offset the disadvantages in displacements and wetlands impacts. So, the boulevard scores higher than the five-lane option.

Table 3-18
Sector F1 Evaluation Data

F1 - 2.20 miles Oak Hill to N of Hubbard				
Improvement →	Five-Lane		Narrow Blvd.	
Factor ↓	#	Per Mi.	#	Per Mi.
1. Displacements				
Homes	1	0.5	8	3.6
Businesses	0	0.0	1	0.5
Vacant DU Lots *	0	0.0	0	0.0
2. Historics (Properties Directly Affected)				
Maybe Nat. Reg.	0	--	0	--
3. Wetlands (acres)				
Highest value	0.62	0.28	1.01	0.46
Medium value	0.04	0.02	0.09	0.04
Lowest value	0.00	0.00	0.06	0.03
Total (acres)	0.66	0.30	1.16	0.53
4. Community Cohesion				
High/Medium/Low	Medium		Medium	
5. Construction Cost				
(millions of dollars)	\$8.28	3.76	\$9.53	4.33
6 Roadway Safety				
Total Accidents Year 2025	119	54.1	53	24.1

Source: The Corradino Group

* The number of total takes of platted but "unbuilt" residential lots.

Table 3-19
Sector F1 Evaluation Results

Consultant Unweighted Scores		
	Alternative 1 Five-Lane	Alternative 2 Narrow Boulevard
Displacements	86.50	71.57
Historics	83.57	82.64
Wetlands	64.93	59.36
Community Cohesion	52.50	63.36
Construction Cost	76.86	74.93
Roadway Safety	57.00	84.93
Citizens Weighted Scores		
Displacements (18.82%)	16.28	13.47
Historics (16.49%)	13.78	13.63
Wetlands (16.30%)	10.58	9.68
Community Cohesion (17.33%)	9.10	10.98
Construction Cost (12.13%)	9.32	9.09
Roadway Safety (18.93%)	10.79	16.08
Total	69.85	72.92
Consultant Weighted Scores		
Displacements (18.97%)	16.41	13.58
Historics (16.98%)	14.19	14.03
Wetlands (17.17%)	11.15	10.19
Community Cohesion (16.43%)	8.63	10.41
Construction Cost (9.48%)	7.29	7.11
Roadway Safety (20.97%)	11.95	17.81
Total	69.61	73.12

Source: The Corradino Group

3.2.10 Sector F2

The impact data in Sector F2 reflect the same impacts for both alternatives in all categories except cost and roadway safety. This is because the boulevard here is very narrow, i.e., contained in the existing 120 feet of right-of-way as is the five-lane option. This is possible because direct access from adjoining properties is mostly limited to cross streets. So, the boulevard's higher score in the roadway safety area makes its the highest scoring option in Sector F2.

Table 3-20
Sector F2 Evaluation Data

F2 - 1.25 miles N of Hubbard to I-75				
Improvement →	Five-Lane		Narrow Blvd.	
Factor ↓	#	Per Mi.	#	Per Mi.
1. Displacements				
Homes	1	0.8	1	0.8
Businesses	0	0.0	0	0.0
Vacant DU Lots *	0	0.0	0	0.0
2. Historics (Properties Directly Affected)				
Maybe Nat. Reg.	1	--	1	--
3. Wetlands (acres)				
Highest value	0.00	0.00	0.00	0.00
Medium value	0.00	0.00	0.00	0.00
Lowest value	0.00	0.00	0.00	0.00
Total (acres)	0.00	0.00	0.00	0.00
4. Community Cohesion				
High/Medium/Low	Medium		Medium	
5. Construction Cost				
(millions of dollars)	\$3.70	2.96	\$4.82	3.86
6 Roadway Safety				
Total Accidents Year 2025	95	76.0	43	34.4

Source: The Corradino Group

* The number of total takes of platted but "unbuilt" residential lots.

Table 3-21
Sector F2 Evaluation Results

Consultant Unweighted Scores		
	Alternative 1 Five-Lane	Alternative 2 Narrow Boulevard
Displacements	86.79	86.71
Historics	31.79	31.43
Wetlands	91.79	91.79
Community Cohesion	52.07	63.93
Construction Cost	87.93	85.57
Roadway Safety	52.43	78.57
Citizens Weighted Scores		
Displacements (18.82%)	16.33	16.32
Historics (16.49%)	5.24	5.18
Wetlands (16.30%)	14.96	14.96
Community Cohesion (17.33%)	9.02	11.08
Construction Cost (12.13%)	10.67	10.38
Roadway Safety (18.93%)	9.92	14.87
Total	66.15	72.80
Consultant Weighted Scores		
Displacements (18.97%)	16.46	16.45
Historics (16.98%)	5.40	5.33
Wetlands (17.17%)	15.76	15.76
Community Cohesion (16.43%)	8.56	10.51
Construction Cost (9.48%)	8.34	8.12
Roadway Safety (20.97%)	10.99	16.47
Total	65.51	72.64

Source: The Corradino Group